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(54) Anschraubbare Profilteileschienen-Halterungen

DE 298 08 091 U 1

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Beschreibung:

Anschraubbare Profilteileschienen - Halterungen.

Die teleskopierbaren Profilteile mit denen Schienen zur Überwindung von Hindernissen für Rollstuhlfahrer zusammengesetzt werden können, sind flexibel und nicht für den stationären Einsatz konzipiert. Mit den Halterungen können statische Schienen montiert werden.

Anschraubbare Profilteileschienen - Halterungen.

Die Systemhalterungen fixieren die Einzelprofilteile zum Beispiel in ihrer Mitte. Die Profilteile werden horizontal in die Halterung eingeschoben und halten das Profilteil ohne weitere Hilfsmittel fest, da sie es von fünf Seiten umklammern. Die Halterungen können z.B. auf Treppenstufen befestigt, verschraubt werden oder die Halterungen können der Rollstuhlbreite entsprechend auf anderen Materialien (Metalle / Holz etc.) fixiert werden. So können sehr flexible Profilteileschienen auf alle gewünschten Maße zusammengesteckt und statisch verankert werden. Es kann eine Schiene z.B. auf Holz geschraubt werden, die jederzeit aufgestellt und geklappt werden kann. Schmalere Treppen können so von Rollstühlen befahren und bei hochgeklappten Schienen als normale Treppe benutzt werden. Teure Spezialanfertigungen können so vermieden und kostengünstige, flexible Schienen realisiert werden, die Behinderten den Zugang von bisher unerreichbaren Etagen usw. ermöglichen. Profilteile die rechtwinklig über Stufenkanten befestigt werden, ermöglichen sichere Verbindungen mit den Profilteilen, die Rollstuhlschienen jeder Anforderung ermöglichen.

06.05.98

Anschraubbare Profilteileschienen - Halterungen.

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Schutzansprüche:

Hiermit beantrage ich als Privatperson die Eintragung des Gebrauchsmusters.

1. Anschraubbare Profilteileschienen - Halterungen.

Dadurch gekennzeichnet, daß Profilteile, aus denen Schienen für Rollstühle zusammengesetzt sind, horizontal in die Halterungen geschoben und von dieser statisch fixiert werden, durch:

- Halterungen die 40 mm lang sind und zwei Seitenflanken haben, die 20 mm hoch sind. (Innenmaß)
- Die Flanken sind im Winkel von 10 ° bis 23 ° nach oben (vom Boden nach außen hin) schräg integriert.
- Die Halterung ist 40 mm breit, an zwei Seiten befinden sich die Flanken. (Innenmaß)
- Die obere Flankenkante hat einen nach innen ragenden Überstand als Abschluß, der 3 mm nach innen ragt.
- Unter der Bodenfläche oder neben den beiden Flanken geht die Halterung beidseitig, flach um mindestens 25 mm nach außen.
- Die Ausladungen sind mindestens 10 mm breit und 5 mm dick (hoch).
- Jeweils mindestens 10 mm von außen nach innen befindet sich eine Öffnung (mit oder ohne Senkung) von mindestens 4 mm Durchmesser (Schraubenbohrung).
- Die Halterungen haben plane oder im Winkel von 90 ° nach unten abgehende Bodenflächen, auf denen die Flanken und der Boden im Winkel von 45 ° sind.

[Translator's note: It is evident that drawings exist and were not supplied; further that the material supplied for translation may only be a fragment. Experience shows that this type of presentation renders the translation a world-class problem -- a problem which even the most self-interested and crafty original author never intended to present; the translation is offered with this strong caution, and on a best-efforts basis only, without further warranty. The approach of this translator has been generally to render a slavishly (and possibly absurdly) literal translation of the claim, wherewith hopefully a reader with access to the drawings and thereby the key to the problem would need no knowledge of German in order to correct and interpret the herein-translated claim with the aid of said drawings.]

Ger. Gbm. DE 298 08 091 U1. Int.Cl.(6): A 61 g 3/08.

File no.: 298 08 091.5.
App. date: May 06, 1998.
"Registration" date [(laying-open)]: Aug 27, 1998.
Publication in patent gazette: Oct 08, 1998.

Patentee: Thomas Brecht, address Schönbornstrasse 32,
76646 Bruchsel, Germany.

Title: Screw-mountable holding means for profile rails.

[SPECIFICATION]

The [invention] relates to telescopable profile pieces which may be used as elements of rails for overcoming impediments to passage by wheelchairs. Said profile pieces are flexible and are not intended for stationary installation. [The invention further relates to] holding means for mounting static rails.

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The system holding means [sic] fix the individual profile pieces in, e.g., the middle [of said profile pieces]. The profile pieces are pushed horizontally into the holding means, and the profile pieces are held fixed [by means of said holding means] without other auxiliary means, in

that they are clamped from the exterior on five sides. The holding means may be screwed onto, e.g. stairsteps, or may be fixed to other materials (metal, wood, etc.) corresponding in width to the width of the wheelchair. Thus, very flexible profile piece rails may be assembled together corresponding to any desired dimensions, and statically anchored. E.g., a rail may be screwed to a wood [base] which at any time may be placed in operating position or [lit., "and"] folded up [out of the way]; thereby, wheelchairs may negotiate narrow stairways, after which the rail(s) may be folded out of the way to allow the stairs to be used as normal stairs. This avoids expensive special [wheelchair] ramps and the like, and allows the use of inexpensive, flexible [sic] rails. In this way, impaired persons can have access to spaces (e.g. levels or floors) which were hitherto unaccessible to them. Profile pieces which can be fixed [to] perpendicular surfaces across stairstep edges allow said profile pieces to be securely fixed, and make wheelchairs adaptable to virtually any conditions.

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Claims [sic -- plural]:

1. Screw-mountable holding means for profile rails; characterized in that profile pieces comprising elements of rails for wheelchairs are pushed horizontally into said holding means, and the profile pieces are held statically fixed by means of said holding means, wherewith:

-- The holding means are 40 mm long and have two side members (laterally disposed legs) which are 20 mm high [sic] (inner dimension);

-- The side members are disposed at an inclination of 10-23^{o} upward [sic] (outward from the base);

-- The holding means are 40 mm wide (inner dimension), with the side members disposed at the sides;

-- [For each leg,] the upper edge of the leg has an inwardly extending projection as a terminus, extending 3 mm inward;

-- Below the base or next to the two legs the holding means extend flatly outward on each side by at least 25 mm;

-- The outward projections ("Ausladungen") are at least 10 mm wide [sic] and 5 mm thick (high);

-- Screw openings [on each side] are disposed at least 10 mm inward from the outer extremity, which openings are of diameter at least 4 mm and may be countersunk;

-- The holding means have base surfaces which are planar or which extend downward at 90^{o}, which base surfaces are at 45^{o} with respect to the legs and base [sic].

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Ger. Gbm. DE 298 08 096 U1. Int.Cl.(6): A 61 g 5/06.

File no.: 298 08 096.5.
App. date: May 06, 1998.
"Registration" date [(laying-open)]: Aug 27, 1998.
Publication in patent gazette: Oct 08, 1998.

Patentee: Thomas Brecht, address Schönbornstrasse 32,
76646 Bruchsel, Germany.

Title: Wheelchair which can negotiate stairs and which is driven by an electric motor.

[SPECIFICATION]

Severely impaired individuals who cannot walk (or can only walk with difficulty) without a wheelchair have problems when trying to use a wheelchair to negotiate uneven terrain, steps, staircases, etc. On mud or wet grassy soils, or in forest lands, wheelchairs, with their weight concentrated on small supporting areas, tend to sink rapidly such as to become essentially immobilized. Whereas it may be practicable for an individual driving a motorized wheelchair to obtain assistance in negotiating a single step (upward or downward), such negotiation of a typical staircase having a plurality of steps, even with such assistance, is virtually impossible. In attempting to negotiate [even a small step with

ample rolling clearance such as] a curb or the like, the additional problem is encountered of maintaining the balance of the wheelchair to avoid tipping.

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The [inventive] stair-negotiating wheelchair which is capable of negotiating rough terrain and obstacles to the extent of [a pitch of] up to 50^{0} [sic] confers true independence on wheelchair-bound individuals. The user sits on a seat which has appropriate support on three sides. The seat is disposed in the middle of the carriage and can be raised from a minimum seat altitude of 575 mm to a maximum seat altitude of 875 mm. Bank deposit boxes, automatic teller machines, public telephones, relatively high shelves, etc., are thus made easy to reach. With wheelchairs according to the state of the art there are many front-facing or forward movements which require complex maneuvering or outside assistance; the [inventive] wheelchair enables most of these to be carried out independently and easily. The carriage may be disposed longitudinally or transversely [to the direction in which the seat is facing], since the seat is spinnable (rotatable) 360^{0} around the vertical axis. [This enables] the user to travel right and left along shelves in a supermarket or the like [while facing the shelves], without the need to steer the carriage.

Ordinary wheelchairs are difficult or impossible to use when traveling over rough terrain (e.g. paths in woods, etc.), stairways, etc. The carriage [of the inventive wheelchair] has six wheels (with e.g. pneumatic tires). Its drive mechanism and batteries are disposed close to the underlying surface (ground), giving it a very low center of gravity, hence a favorable impact axis [(pitch axis) (e.g. to keep from toppling forward if it rolls down the

first step of a downward staircase while in forward motion)], a favorable yaw axis [sic], and a favorable roll axis. If it is desired to descend a downward stairway, the first pair of wheels rolls down onto the first down-step, and the pitch angle of the carriage decreases [lit., "changes"], causing automatic control means to go into effect which incline the seat to incline backward [with respect to the carriage]. [Advance of] the second (middle) pair of wheels causes further backward inclination of the seat; and so forth. When the carriage is disposed completely on the [downward] staircase, with [(e.g.)] each of the three pairs of wheels on a different step level, the pitch angle [of the carriage] is c. 45^{o}, and accordingly the seat is caused to incline backward [with respect to the carriage] by the same angle, viz. c. 45^{o}. Under these circumstances, the user continues to be seated at [approximately] his original sitting attitude angle [(absolute attitude)] (where he was originally seated horizontally). The pneumatic tires are filled with gas, so as to provide [c.] 100 mm of side surface available [to flex] to provide a spring cushion for the transition from step to step. When the carriage reaches the [lower] end of the staircase, the pitch angle of the carriage is changed, eventually becoming horizontal, and in the process [(by control means provided)] the seat surface is again maintained in a horizontal [absolute] attitude. The [kinematics] serve to efficiently [sic] avoid abrupt changes in the position or attitude of the [user's] upper body; if this were not the case, the user would suffer discomfort [or injury] when negotiating stairways, hilly or mountainous terrain, etc. The low center of gravity and the all-wheel drive provide the impaired user with capabilities not heretofore available, or available only with difficulty or with external assistance or external means of support. E.g., if an impaired user using a state of the art wheelchair should wish to drive an

automobile, it would be necessary for him to perform difficult and complex maneuvers to transfer [himself from the wheelchair to the automobile driver's seat] and to load the wheelchair [into the automobile], etc. Using the [inventive] wheelchair, the user can, e.g., drive [the wheelchair] directly to the driver's location at the steering wheel, using a rear approach, e.g. in a minivan or the like (in which the customary driver's seat has been removed). The wheelchair is [then] anchored to the floor of the vehicle (e.g. using belts). Because the wheelchair has adjustable seat altitude, the driver can adjust to the optimum driving position; further, the user's body attitude can be adjusted by adjusting the seat inclination. Thus, the wheelchair user can now drive a motor vehicle without leaving his wheelchair and without receiving external assistance. The carriage without the seat is very compact -- having a volume of only c. 0.27 cu m, and weighs only 60-100 kg (depending on the drive motor(s) and battery size. Accordingly, it is easy to ship. When negotiating rough terrain and stairways, the seat is preferably maintained at the minimum altitude, in order to have the lowest practicable [lit., "most favorable"] center of gravity. An automatic program should be provided such that when the pitch of the carriage exceeds ["] 20^{o} the carriage is slowed down and the speed of the carriage is limited to c. 1 cm/sec. If the pitch exceeds ["] 50^{o}, an immediate emergency stop should be automatically triggered, to keep the [wheelchair] from toppling. A roll bar, a roof or cabin (possibly with a solar cell panel to extend operating life [between charges]), and a shopping basket may be provided. A joystick and/or keypad may be provided to enable control of the driving and adjusting functions using [a hand and thumb or] two fingers. Moving the joystick forward would cause forward travel, moving it upward [sic] would cause adjustment of the seat

altitude, etc. Separate control means should be provided for controlling seat rotation, in order to avoid errors. Operating power of a duration sufficient for one day's activities can be ensured with the use of gel batteries [sic] and efficient small electric motors. The [inventive] wheelchair system enables impaired individuals to achieve improved quality of life.

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Claims [sic -- plural]:

1. A wheelchair which can negotiate stairs and which is driven autonomously by an electric motor; characterized in that said wheelchair has 6 driven wheels on a carriage which bears a seat which can be controllably rotated 360^{o} [around a generally vertical axis] and [which seat] can be controllably inclined 45^{o} forward and backward; and further [characterized] in that:

-- Said wheelchair has a trapezoidal-rectangular [sic -- described infra] chassis (undercarriage) having minimum dimensions [in the range] 400x600 to 400-850 mm and lateral height 250 mm (sides, ex the wheels);

-- The front and rear walls of the carriage are disposed at an angle of 45^{o} upward with respect to the base of the carriage, at said base;

-- Drive axles are provided which are disposed at the front and rear border regions of the underside of the carriage, such that the front pair and rear pair of wheels each have an exposure of 225^{o} [around the generally horizontal axis];

-- At the [longitudinal] midpoint of the carriage

([e.g.] [c.] 300 mm), a pair of wheels is provided which are the same size [sic -- evidently same size as the other 4 wheels];

-- The wheels [sic -- evidently the tires] are at least 250 mm high and 100 mm wide, and are mounted on rims of diameter at least 50 mm (which [rims] are comprised of plastic and/or metal material);

-- The pneumatic tires (comprised of rubber and/or plastic) have profiles [sic];

-- The dimensions of the profiles [of said tires] are at least 10 mm in the longitudinal [sic] and transverse directions [sic -- supra the wheels are said to be 100 mm wide];

-- The combinations of tires and wheels are suspended on rigid axles or independent suspensions, wherewith the [rigid axles and/or independently suspended axles] may optionally be spring-loaded [and/or shock-absorber-mounted];

-- The at least 3 axles provide individual axle drive or individual wheel drive (all-wheel drive), [which may be] direct or indirect [(transmission- and/or differential-mediated)] drive;

-- The direct drive or transmission-mediated drive is controlled [sic] by electric motor(s) (with individual motors and/or a central motor being provided);

-- If the drive means comprise a central motor, said motor is disposed in the center of the carriage; if the drive means comprise individual motors [for each axle], said motors are disposed at [generally] the centers of the axles; if the drive means comprise individual motors [for each wheel], an appropriate analogous [sic] disposition is provided;

-- The battery (or batteries) is/are disposed centrally in/on the carriage ([it being noted that] the center of gravity of the carriage is determined [essentially] by the battery/batteries and the drive means);

-- The carriage (body of the wheelchair) is comprised of plastic(s) and/or metal(s), and may be of single unit or assembled construction;

-- The upper side of the carriage ([e.g.] 400x850 mm) is provided with a fixable cover;

-- A hollow riser is provided in the center of said cover;

-- Said riser is at least 200 mm high, and has a square, rectangular, round, or truncated pyramidal shape;

-- Said riser is disposed over the center point [sic] of the carriage;

-- An opening (which may be round) of dimension (diameter) at least 40 mm is disposed at the

upper center of said riser;

-- Said throughgoing opening accommodates the seat altitude adjusting means, which may be hydraulically, pneumatically, or mechanically driven;

-- The seat altitude adjusting means is capable of increasing the altitude of the seat by at least 300 mm ([e.g.] from an altitude of 575 mm to an altitude of 875 mm);

-- The seat is fixed to the upper end of the seat altitude adjusting means, wherewith the means of said fixing may be plug means or screw means, and the seat may be removable;

-- The width of the seat is at least as great as the width of the carriage ([e.g.] [the seat dimensions may be] 400x400 mm);

-- Said seat has a backrest and two side members (armrests) which may be swingable or removable; and said seat also has foot supports (which may be movable);

-- The mounting of said seat allows it to be tilted forward and backward to the extent of up to 45^{0} (with adjustment by mechanical or electric motor means);

-- Said seat is spinnable (rotatable) around 360^{0} (by mechanical or electric motor means), viz. around [a generally vertical axis extending through] the center of the seat (where the seat altitude adjusting means are disposed);

-- Mechanical or electronic means are provided to control the seat [position and attitude] involuntarily ([e.g.] when the pitch of the carriage [changes], to a maximum 45^{0});

-- Control means are provided such that the pitch of the carriage can be " 45^{0} without the seat attitude [(front/back azimuthal attitude)] deviating from the horizontal;

-- The functions of the carriage and seat are operated by keyboard means and/or individual

control means;

-- The control means are disposed at the left and/or right front of the armrest(s); [said control means] may be static or flexible (e.g. flexible gooseneck means);

-- The system controls govern forward and backward travel, and rightward and leftward steering of the wheels ([e.g.] the wheels on one side may be accelerated or decelerated or braked), negotiating staircases and uneven terrain, adjusting seat altitude, adjusting seat [pitch] attitude angle, adjusting seat spin (rotation, i.e. yaw) angle, and braking;

-- A sensor (for measuring pitch angle) is disposed in the control electronics or in the carriage, which sensor causes the drive motors to slow down (be throttled) when the pitch angle exceeds 20^{0};

-- The maximum speed of the carriage is 5 km/hr, and the

minimum speed (over terrain) is 0.036 km/hr ([which is the] safety-dictated speed when the pitch is 45^{0}.

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